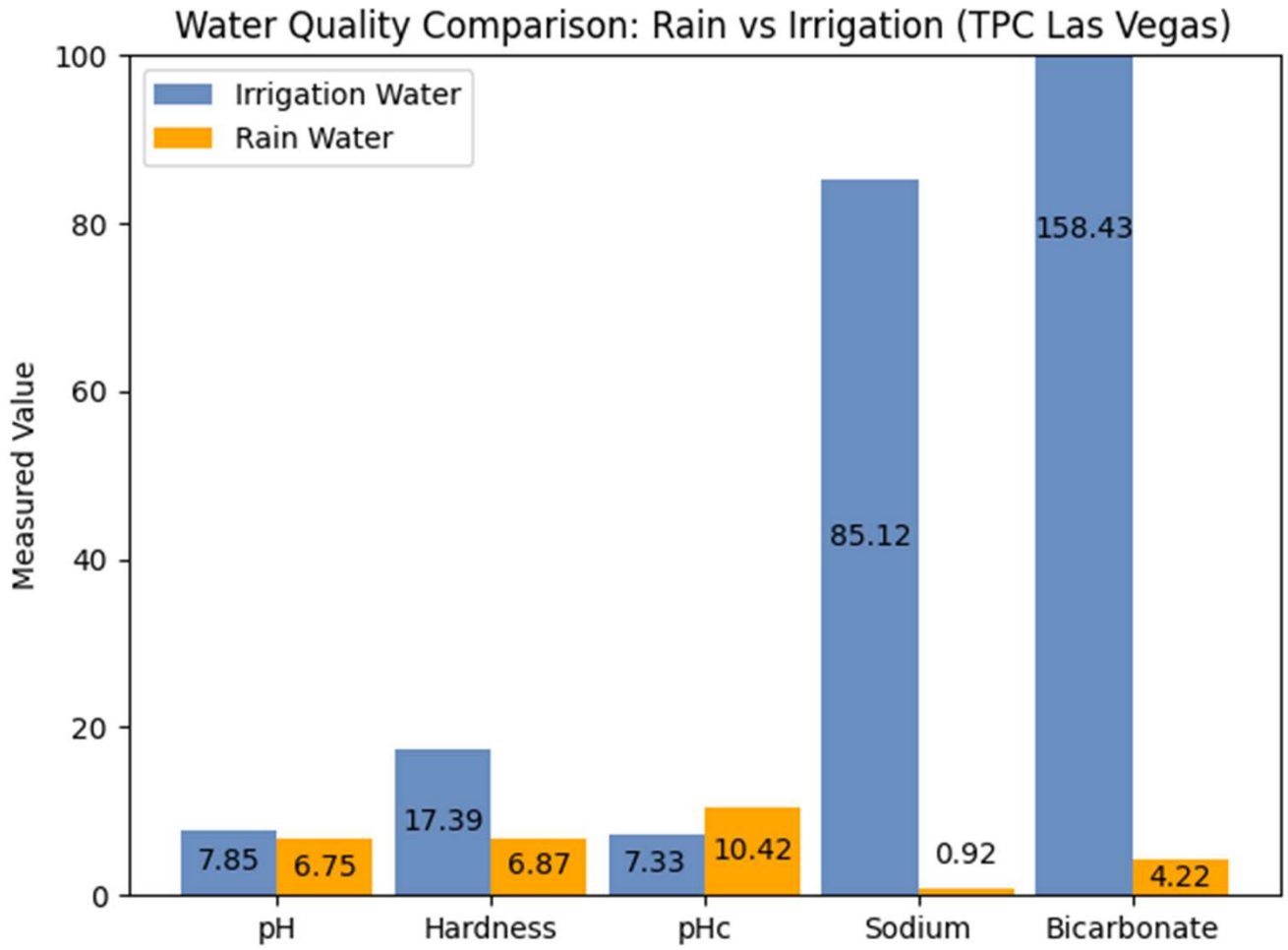
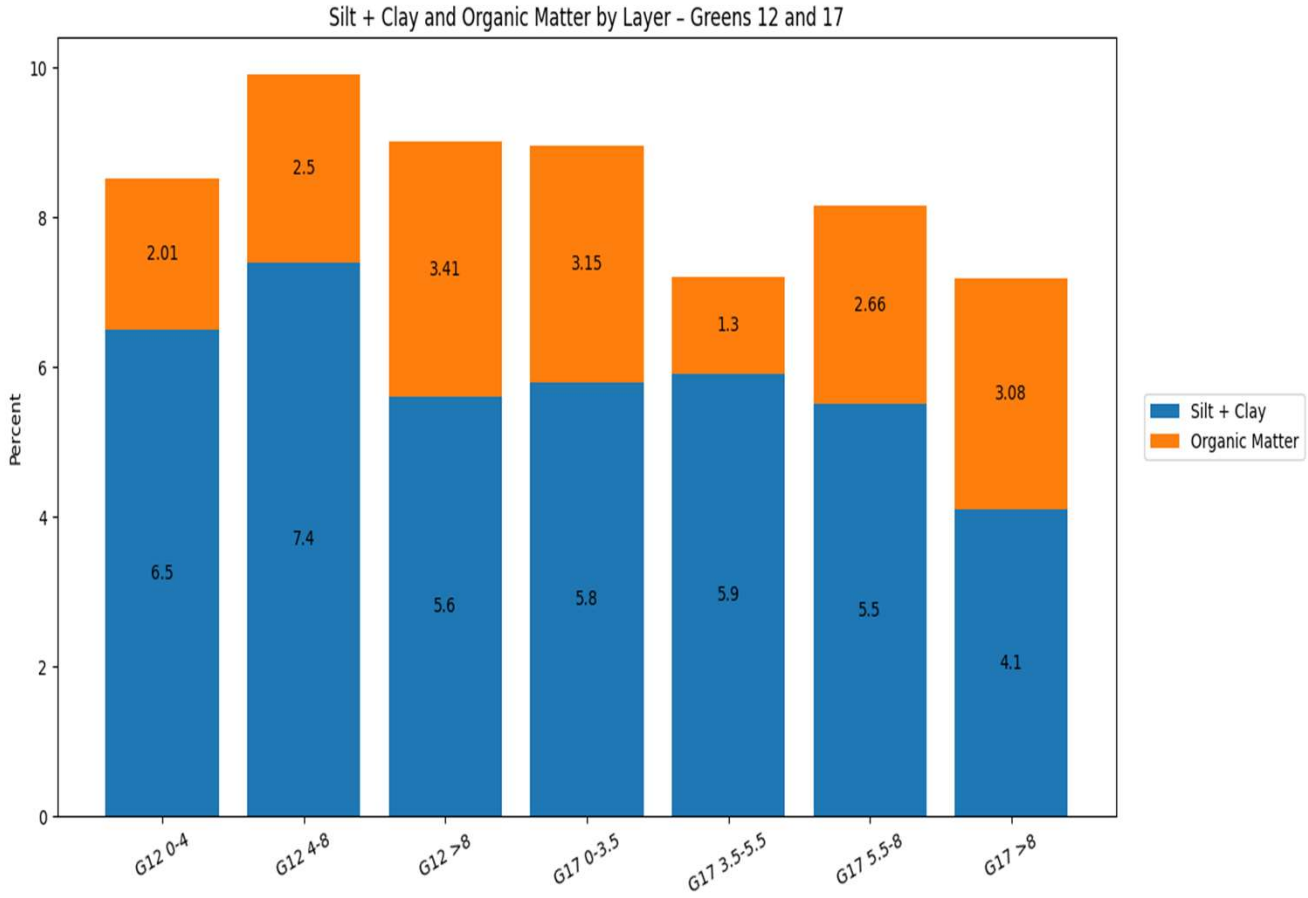
IRRIGATION WATER



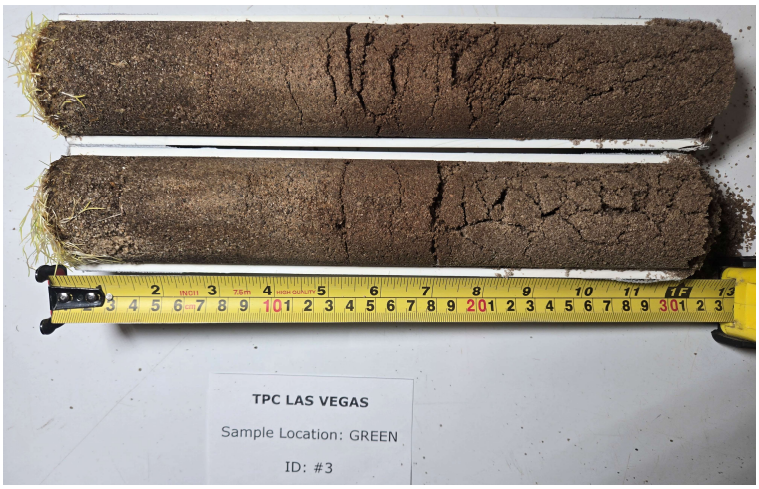
- I'm showing your irrigation water against a recent rainwater sample I collected at Dragon Ridge Country Club in the fall. One reason is I don't have any other historical data on your property, and the second is just to give you a point of reference for your irrigation water source. Although it is considered one of the better ones in the Las Vegas valley, it still has its downside. Bicarbonates are slightly elevated to a level which needs to be considered with how it affects the soil. And although the sodium levels in city water are not near what they are in reclaimed, water there still is an effect of "stacking" sodium in a profile when water can't drain properly.

GREENS



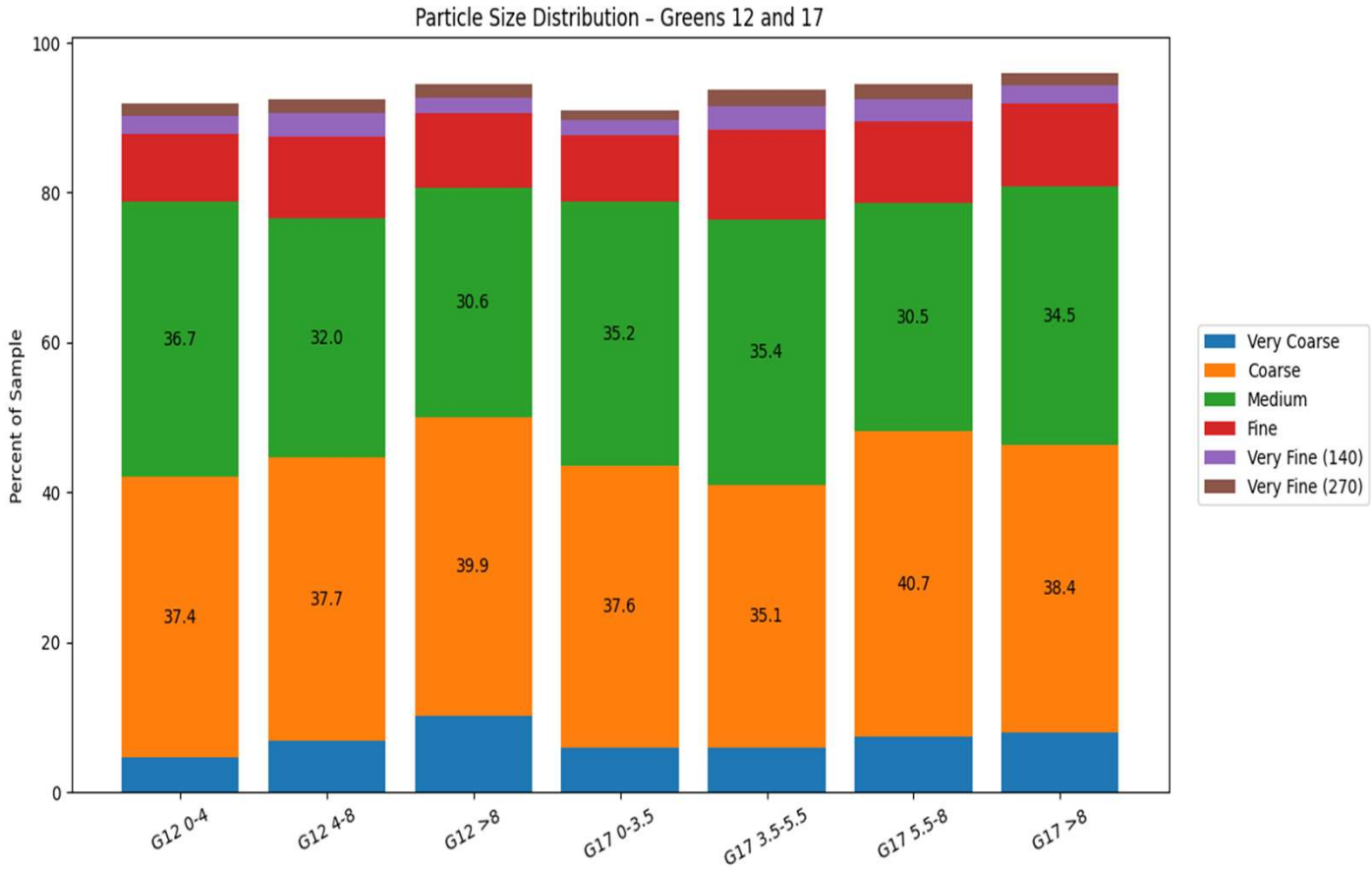
- I'm using this chart to show the finer particle materials that are most likely working to inhibit proper drainage throughout the entire profile. A typical sand based green in Las Vegas may have anywhere from a 2 inch to a 5 inch layer after years of aging and multiple management practices programs. It is not unusual to see high organic material content in those top layers, but then it usually drops right off to less than 1%. I'm unfamiliar with the sand used to build these greens originally, and I know over that same 30 years there have been multiple sand top dressing options used. Some may have changed in the 2010, when there was no usable sand in the area anymore and some may have been prior to 2000, when there were multiple sand suppliers in the area. When you combine the rather high silt and clay together with the higher organic material percentages in each layer, I would not advise rototilling the greens to renovate.

GREENS



LAS VEGAS

PHYSICAL ANALYSIS



- When you look at green #12 you will notice that the sand gets coarser as you move down through the profile. As a rule of thumb, you want to layer coarser material over finer material. In the case of green #12, it is the opposite. Green #17 is similar, but a little more subtle. You may notice the stair step look in the very course section of this graph. You would rather have the "Very Coarse Material stairway" going down through the profile.

- Using the coefficient of uniformity data, there seems to be an issue where the middle layers of each green, are more prone to compaction then the layers above or below them. Again, something that's subtle, but would lead me to believe that removing 4 inches from the top of each green and then rototilling in a new product would not be the most successful procedure. Renovating the greens in this way would make the day-to-day management of them very difficult.

SUMMARY

Firstly, I hope this information helps you make the right decision for the green's renovation. Las Vegas area USGA style greens need to be constructed properly using the best possible products to do that construction. After that, seeding is the best option. If that isn't the case, it makes the job of maintaining healthy and consistent greens very difficult.

In Las Vegas, a Superintendent is restricted in many ways from growing healthy grass.

- Although you have potable water, it has enough sodium, chloride and bicarbonate to cause issues in the soil. So, water movement is very important. In my opinion, we use water in Las Vegas strictly for hydration and then we prefer that it keep moving through the profile as fast as possible. Things like gypsum, and acid-based products that are sprayed, can keep the profile cleaner of the build up of salts.

- The environment there is very difficult and leaves little room for error. At the time the grass needs certain cultural practices, the weather says that it's not the best time to do it. Excessive heat, lack of rain and even things like shade from houses can make grass growing tough.

- In my 20 years working in the valley, there have been many trends. One trend that seemed to hang around the longest, is not aerifying greens enough and not top dressing and verticutting when it matters. Specifically for Las Vegas, I have always recommended 4-6 aerifications per year and verticutting and topdressing bi-weekly from May through September. This is the critical time for growing bent grass greens there. Few courses do it, but the one's that do get off the "razors edge" of bentgrass greens management in the dessert.

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